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Applicant(s):Masayoshi TAKAHASHI, et al.)	Re: Information Disclosure
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International Application No.:)	
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28 September 2004)	
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For: "METHOD FOR COLLAPSING)	
MICORBUBBLES")	Our Ref: B-5926PCT 623364-3
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)	Date: March 29, 2006

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If any fees are due, please charge our Deposit Account No. 12-0415 or credit any overpayment to our Account No. 12-0415. No fees should be due because this Information Disclosure Statement is being filed concurrently with the above-identified U.S. patent application.

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The person making this statement is the practitioner who signs below on the basis of information supplied by an individual associated with the filing and prosecution of this application (37 C.F.R. § 1.56(c)) and on the basis of information in the practitioner's file.

Respectfully submitted,



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Enc: Form PTO-1449 (modified) (1 pg.)
Copy of the International Search Report w/English translation (4pp)
Copies of the documents listed on Form PTO-1449 (modified)

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LIST OF PATENTS AND PUBLICATIONS STATEMENT	Int'l App. No. PCT/JP2004/0014561	Int'l Filing Date 28 September 2004
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U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	ISSUE DATE	NAME	CLASS	SUBCLASS	FILING DATE
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FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO
		2002-143885	05/2002	JP			abstract
		2003-245662	9/2003	JP			abstract
		2001-300522	10/2001	JP			abstract
		2002-355684	12/2002	JP			abstract
		2000-254483	9/2000	JP			abstract
		2003-126850	5/2003	JP			abstract
		2003-200156	7/2003	JP			abstract
		2002-300982	10/2002	JP			abstract
		2001-300525	10/2001	JP			abstract
		11-309452	11/1999	JP			abstract
		10-066850	3/1998	JP			abstract

EXAMINER	DATE CONSIDERED

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

List

1. JP2002-143885A
2. JP2003-245662A
3. JP2001-300522A
4. JP2002-355684A
5. JP2000-254483A
6. JP2003-126850A
7. JP2003-200156A
8. JP2002-300982A
9. JP2001-300525A
10. JP11-309452A
11. JP10-066850A

1)

Publication number: JP2002-143885A

Date of filing: 14.11.2000

Title of invention: MICRO BUBBLE

Abstract:

To make clear the structure of micro bubbles, to explain the mechanism of micro bubbles and physicochemical properties and functions thereof, and to provide a method for producing the micro bubbles.

The micro bubbles have about $\approx 30 \mu\text{m}$ diameter when produced under normal pressure and the bubbles gradually decrease in the size within a specified life and then disappear. The micro bubbles emit enormous energy in the process of decreasing the size and disappearing in a rather short time after production. The bubbles have functions to promote the physiologic activity of living organism by the energy of the bubbles, particularly to promote the blood flow of living organism to enhance the metabolism.

2)

Publication number: JP2003-245662A

Date of filing: 21.02.2002

Title of invention: WASTE WATER TREATMENT SYSTEM

Abstract:

To effectively reduce excess sludge and to provide an effective treatment method for waste water.

A microbubble generation means, a cavitation technique and a discharge system are provided in order to solve the problem.

3)

Publication number: JP2001-300522A

Date of filing: 25.04.2000

Title of invention: METHOD FOR DECOMPOSING DIFFICULT-TO-DECOMPOSE ORGANIC MATTER

Abstract:

To decompose a difficult-to-decompose organic matter such as dioxins and agricultural chemicals contained in water, sludge and slurry at normal temperature and pressure, with a small quantity of energy and without using special chemicals or forming a by-product.

An object 2 to be treated with the dissolved oxygen concentration adjusted to a specified value in a dissolved oxygen adjusting tank 1 is conducted to a reaction tank 10. The object 2 is irradiated with an ultrasonic wave from an ultrasonic wave generator 13 in the reaction tank 10, hence the solid phase of the object 2 is extracted by vibration, and the liquid phase is decomposed.

4)

Publication number: JP2002-355684A

Date of filing: 31.05.2001

Title of invention: WASTEWATER TREATMENT METHOD AND APPARATUS

Abstract:

To rapidly and efficiently decompose a harmful substance contained in wastewater by both of ozone and hydrogen peroxide.

In the wastewater treatment method, wastewater, ozone and hydrogen

peroxide are together sucked by a pump and this pump generates cavitation along with a rotary impeller to treat wastewater with ozone and hydrogen peroxide. The wastewater treatment apparatus is equipped with a container 1 storing wastewater, the cavitation pump 2 connected to the suction side of the container 1 to transfer the wastewater of the container 1 by the rotary impeller, an ozone feeder 3 for supplying ozone to the suction side of the cavitation pump 2 and a hydrogen peroxide feeder 4 for supplying hydrogen peroxide to the suction side of the cavitation pump 2. In the wastewater treatment apparatus, wastewater, ozone and hydrogen peroxide are sucked to be fed under pressure while generating cavitation by the cavitation pump 2 and wastewater is treated with both of ozone and hydrogen peroxide to be transferred.

5)

Publication number: JP2000-254483A

Date of filing: 12.03.1999

Title of invention: CAVITATION REACTOR

Abstract:

To provide a cavitation reactor whose capacity can be improved.
In a cavitation reactor provided with a pressurizing means 19 for pressurizing liquid to be treated 62 and a nozzle 21 for jetting out the pressurized liquid to be treated 62 into a reaction vessel 15, gas injection means 9, 11 for injecting gas into the liquid to be treated 1 fed to the pressurizing means 19 are provided and a fine bubble generating means 13 for making the gas injected into the liquid to be treated 1 into fine bubbles is provided between the gas injection means 9, 11 and the pressurizing means 19, thereby forcibly feeding the fine bubbles generated by the fine bubble generating means 13 and solid particulates such as dust in the air or in the gas injection means 9, 11 as nuclei of cavitation bubbles.

6)

Publication number: JP2003-126850A

Date of filing: 26.10.2001

Title of invention: APPARATUS AND METHOD OF TREATING ORGANIC SUBSTANCE-CONTAINING WATER

Abstract:

To provide an apparatus and method for treating organic substance-containing water capable of effectively removing nonionic TOC (Total Organic Carbon) components using a simple device, at a low cost, in a primary pure-water processing line of an ultra-pure water production system.

The apparatus comprises a liquid-feeding means 2, a cavitation generating means 3, a circulation means 6, an ion-exchange device 4, a measurement device 5 and a control means 7. The liquid-feeding means 2 feeds untreated organic substance-containing water under pressure, and the cavitation generating means 3 generates cavitation by means of ejecting of the liquid treated under pressure and fed by the liquid-feeding means 2, therein. The circulation means 6 returns the liquid treated by the cavitation treatment to the prior stage immediately before the cavitation generating means 3, and the ion-exchange device 4 removes ionic substances present in the liquid treated by the cavitation treatment. The measurement device 5 is provided in the post stage to the ion-exchange device 4 and measures the concentration of organic substances present in the treated liquid, and the control means 7 controls the circulation via the circulation means based on the value measured by the measurement device 5.

7)

Publication number: JP2003-200156A

Date of filing: 21.10.2002

Title of invention: APPARATUS AND METHOD OF TREATING ORGANIC SUBSTANCE-CONTAINING WATER

Abstract:

To provide an apparatus for killing microorganisms in liquid and for reducing the number of microorganisms in a liquid at a low cost by destructing, killing and reducing microorganisms in the liquid by shearing treatment utilizing a shearing phenomenon (sudden difference between flow velocities due to a place) present in turbulent flows in

the liquid and also easy in the enhancement of treatment capacity. A slit plate 3 having a plurality of elongated slit-like openings 31 is attached to the inside of a pipe 2 on the way of the pipe 2 in a cross-sectional direction and a pump 4 for feeding a liquid containing microorganisms into the pipe 2 toward the slit plate 3 is attached to the pipe 2.

8)

Publication number: JP2002-300982A

Date of filing: 04.04.2001

Title of invention: COUNTER FOR BATHROOM UNIT

Abstract:

To provide a counter of a bathroom unit well supplying hot water and water from a faucet right above a washbowl or a washbowl receiving part or the like into a deep container such as a bucket mounted on the floor surface of a washing place without using a shower.

The counter of the bathroom unit is provided with a washbowl recessed from the upper surface of the counter capable of accumulating the hot water and the water flowing down from the faucet provided on an upper wall surface and is provided along the wall surface of the washing place. The washbowl is provided with a flow passage through which the hot water and the water accumulated in the washbowl are turned to a width receivable by the container mounted on the floor surface of the washing place of the bathroom and made to flow down into the container on the upper end part.

9)

Publication number: JP2001-300525A

Date of filing: 30.10.2001

Title of invention: METHOD FOR DECOMPOSING DIFFICULT-TO-DECOMPOSE ORGANIC MATTER

Abstract:

To decompose a difficult-to-decompose organic matter such as dioxins and agricultural chemicals contained in water, sludge and slurry at

normal temperature and pressure, with a small quantity of energy and without using special chemicals or forming a by-product.

An object 5 to be treated is stored in a reaction tank 2 forming a closed space, and metal powder reacting with the oxygen in a solution in the tank to form an oxide is charged into the tank 2 from a metal powder feed line 9. The object 5 is irradiated with an ultrasonic wave having the frequency to decompose the organic matter from an ultrasonic wave generator 11 set in the tank 2, the dissolved oxygen acting on the decomposition of the organic matter as an inhibiting factor is removed by the reaction with the metal powder added to the solution in the tank, the decomposition efficiency is improved by the formed cavity, and the decomposition efficiency of the organic matter is improved by the action of the formed metal oxide as a catalyst.

10)

Publication number: JP11-309452A

Date of filing: 01.05.1998

Title of invention: WATER QUALITY IMPROVING DEVICE AND WATER QUALITY IMPROVING SYSTEM

Abstract:

To efficiently and surely improve the water quality of a large volume of water in a short time.

The water quality improving device improves the water quality by a which high temperature, high pressure, impulse waves, and ultrasonic waves, etc., caused by destruction of air bubbles due to cavitation, is constituted of a screw 3 generating the cavitation by rotating it in underwater, a flow straightening plate 15 for straightening the flow of the water ejected from the screw 3 and also generating the cavitation, and a grid plate 16 for further generating the cavitation with the water flow straightened the flow with the flow straightening plate 15 and ejected. The water quality improving system is constituted of a water circulation mechanism 26 for circulating the water deteriorated the water quality, and a water quality improving device arranged one or plural set of the devices in the water circulation path of the water circulation mechanism.

11)

Publication number: JP10-066850A

Date of filing: 29.08.1996

Title of invention: SOLUBILITY REGULATING METHOD OF CONTINUOUS WATER PASSING-TYPE GAS-DISSOLVING APPARATUS AND CONTINUOUS WATER PASSING-TYPE GAS-DISSOLVING APPARATUS FOR EXECUTION THEREOF

Abstract:

To freely regulate the solubility of gas into a liquid in a continuous water passing type gas dissolving apparatus.

A raw water supply route 3, a treated water emitting route 4 and a circulating route 7 mixing gas with the water discharged from the gas dissolving treatment tank 2 through a gas-liquid mixing apparatus 6 to return the water-gas mixture to the treatment tank 2 are provided to the gas dissolving treatment tank 2. The flow rate of the raw water supply route 3 and that of the treated water emitting route 4 are made almost same and the flow rate ratio of the raw water supply route 3 or the treated water emitting route 4 and the circulating route 7 is regulated to regulate the gas solubility of the treated water in the treatment tank 2.